

PATENT APPLICATION

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

1-2303

In re United States Patent Application of:

Applicant: Gregory T. STAUF, et al.

Application No.: 09/681,609

Date Filed: May 8, 2001

Title: BARRIER STRUCTURES FOR  
INTEGRATION OF HIGH K  
OXIDES WITH Cu AND Al  
ELECTRODES

Docket No.: 497 (7486)

Examiner: Thao X. LE

Art Group: 2814

Paper No.: 8

Confirmation No.: 8601

Customer No.: 25559

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DECLARATION UNDER 37 CFR §1.131 OF GREGORY T. STAUF, BRYAN C.  
HENDRIX, JEFFREY F. ROEDER AND ING-SHIN CHEN  
IN U.S. PATENT APPLICATION NO. 09/681,609

Commissioner for Patents  
Washington, DC 20231

Sir:

GREGORY T. STAUF, BRYAN C. HENDRIX, JEFFREY F. ROEDER and ING-SHIN

CHEN, hereby declare:

1. That they are the named inventors for United States Patent Application No. 09/681,609 filed May 8, 2001 in the United States Patent and Trademark Office in their names for "BARRIER STRUCTURES FOR INTEGRATION OF HIGH K OXIDES WITH Cu AND Al ELECTRODES" (hereafter referred to as the "Application") which discloses and claims a microelectronic structure comprising: at least one layer of high dielectric material; at least one conductive barrier layer in contact with the layer of high dielectric constant material, wherein such conductive barrier layer comprises at least one material selected from the group consisting of Pt, Ir, IrO<sub>2</sub>, Ir<sub>2</sub>O<sub>3</sub>, binary metal nitrides, ternary metal

nitrides, and compatible combinations, mixtures and alloys thereof; at least one metal layer in contact with the conductive barrier layer, wherein said metal layer comprises metal or metal alloy including a material selected from the group consisting of Cu and Al (the "Invention").

2. That they are aware that the claims pending in the Application have been rejected in a September 23, 2002 Office Action of the U.S. Patent and Trademark Office on the basis, of cited references which have been applied against the claims, and that they have reviewed and are familiar with the pending claims, Office Action and cited references.
3. That the references cited in the September 23, 2002 Office Action include Ma et al. U.S. Publication 2002/0006674 filed December 19, 2000 and claiming the priority of U.S. provisional patent application no. 60/171,754 filed December 22, 1999 (hereinafter "Ma et al."), which was cited in the Office Action as a primary reference in the rejection of the pending claims 1-39 of the Application under 35 U.S.C. §102(e) and 35 U.S.C. §103(a) in such Office Action.
4. That attached hereto in Appendix A of this Declaration is a true and exact copy (with dates therein blacked out) of their Invention Disclosure entitled "Barrier Structures for Integration of High K Oxides with Cu and Al Electrodes," which they prepared and executed in the scope of their employment by Advanced Technology Materials, Inc., 7 Commerce Drive, Danbury, Connecticut 06810, the assignee of the Application and Invention, and that such Invention Disclosure describes the Invention on pages 2 through 5 thereof.


5. That in section (5) of their Invention Disclosure, the month and year of the conception of the Invention (blacked out in the copy in Appendix A) is set out, and such conception date is prior in time to the priority date of December 22, 1999 claimed by the Ma et al. reference.
6. That attached hereto in Appendix B of this Declaration is a true and exact copy of email correspondence dated November 7, 2000 from Maggie Chappuis, Patent Agent in the Law Department of their assignee, Advanced Technology Materials, Inc., to Steven Hultquist, an outside patent attorney retained by Advanced Technology Materials, Inc., directing him to prepare a draft of a patent application based on their Invention Disclosure identified in Paragraph 4 above.
7. That attached hereto in Appendix C of this Declaration is a true and exact copy of email correspondence dated December 10, 2000 from Steven Hultquist, the outside patent attorney retained by Advanced Technology Materials, Inc., to Oliver Zitzmann, the legal counsel of Advanced Technology Materials, Inc., enclosing text and drawings of the patent application based on their Invention Disclosure identified in Paragraph 4 above.
8. That the patent application identified in Paragraph 7 above was distributed to them from the legal counsel of Advanced Technology Materials, Inc. for their review and commentary, and that the patent application was corresponding finalized thereafter and filed in the United States Patent and Trademark Office on May 8, 2001 as the Application.
9. That the document of Appendix A is offered as evidence that the Invention was conceived prior to the December 22, 1999 priority date claimed by Ma et al.

10. That the documents of Appendices B and C are offered as evidence of continuing diligence from their conception of the Invention to the filing of the Application on May 8, 2001.

We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

  
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Gregory T. Stauf

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Date

  
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Bryan C. Hendrix

2 Jan 03  
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Date

  
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Jeffrey F. Roeder

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Date

  
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Ing-Shun Chen

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